

Interaction of Borate Glasses with Aggressive Solutions.

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It is known, that during the interaction of a glass with solutions of acids, either its dissolution (the transition in a solution of all components including SiO_2) or lixiviation (selective extract of other components except SiO_2) is observed.

Also it is known that the lixiviation represents the result of the process of ion-exchange cation Interdiffusion consisting in an exchange of ions from the surface of a sample on the ions containing in the solution. The ions in the solution H_3O^+ , H_2O , and OH^- are in great interest.

The structure of the surface layers of glasses during there interaction with solutions of acids was researched by the method of chemical analysis, scanning electronic microscopy, infrared spectroscopy and holographic interferometry. By a method of electronic microscopy it is defined that the surface of a sample, treated by a solution of an acid, consists of five layers: a film, porous layer, zone of sedimentation, reaction zone and □□□□□□. It was revealed that the mechanism of interaction of a sample of this system with a solution of an acid tends to the following simultaneously flowing processes:

- 1) Dissolution of components of a unstable phase;
- 2) Diffusion of a solution of an acid and products of dissolution of the sample on the porous layer;
- 3) Gelatinization of secondary silicon dioxide.

Proceeding from the received data, the sequence of solutions of acids of identical concentration on a degree of their influence on the material looks like this: $\text{HCl} > \text{HNO}_3 > \text{H}_2\text{SO}_4 > \text{CH}_3\text{COOH} > \text{HF} > \text{H}_3\text{PO}_4 > > \text{KOH}$, distilled water.